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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,498	07/12/2005	Masato Kurihara	124110	3469

25944 7590 03/30/2009

OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER	
WANG, EUGENIA	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
03/30/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/537,498	KURIHARA ET AL.	
	Examiner	Art Unit	
	EUGENIA WANG	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *1-11 and 14-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12,13 and 18-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 June 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/3/05, 11/28/06, 3/20/07, 7/26/07, 5/14/08*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 1-11 and 14-17 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions or species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 9, 2009.

Response to Arguments

2. Applicant's election with traverse of Group II, species 2 (claims 12, 13, and 18-21) in the reply filed on February 9, 2009 is acknowledged. The traversal is on the ground(s) that all of the claims and species are sufficiently related that a search for one subject matter of any of the Group of claims and species would encompass a search for the subject matter of the remaining claims and species, and that such a search would not be a serious burden. This is not found persuasive because, as set forth within the original Election/Restriction, such a search would be burdensome. The reasons are reiterated herein for clarity's sake: Groups I (claims 1-3), II (claims 4-11), and III (claims 12-20) different in special technical feature, and thus in scope of search. As stated within the original election, the search for Group I would be tailored towards the granulated particle. The search for Group II would be directed towards the electrode with the specified active material as well as the specified current collector. The search for Group III(would be tailed toward the specific method of making (which is not required by Groups I or II). Accordingly, the search for such subject matter is seen to be divergent, and thus would be burdensome. Likewise, with the

Species election (as applied to Group II), the two species differ in special technical feature, as species 1 (claims 12-17) are drawn to only a manufacture of coating liquid, while species 2 (claims 12, 13, and 18-21) is drawn to the method of making coating material and an electrode. Such subject matter is not coextensive in scope, as the search for making a coating material would differ from that of making an electrode. Thus, the search for the separate species would be burdensome. Applicant has not provided any showing as to how such searches are not divergent and burdensome. Thus such arguments are not found to be persuasive.

The requirement is still deemed proper and is therefore made FINAL.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

4. It is noted that an intervening reference between the PCT application filing date and the National Stage application filing is used in the rejection. Should applicant desire to obtain the benefit of priority, a certified English translation of the application must be submitted in reply to this action.

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: [101] (as in fig. 5). Corrected drawing sheets in compliance with 37

CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The abstract of the disclosure is objected to because it is longer than 150 words. Correction is required. See MPEP § 608.01(b).

7. The disclosure is objected to because of the following informalities: the typographical error on p 28, line 9, wherein the fluidizing tank is referred to as being character number "52." Examiner submits that the fluidizing tank has been defined as "5."

Appropriate correction is required.

8. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 12, 13, and 18-21 rejected under 35 U.S.C. 102(e) as being anticipated by US 2005/0064096 (Kurihara et al.)

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As to claim 12, Kurihara et al. teach a method of making a composite particle for an electrode comprising a granulating step by integrating a conductive auxiliary agent and with the active material to make a composite particle (para 0026). The composite particle is then used in a coating liquid, wherein it is dissolved in a solvent (para 0029; fig. 13-14).

As to claim 13, Kurihara et al.'s method of making a composite particle for an electrode comprising a granulating step by integrating a conductive auxiliary agent and with the active material to make a composite particle (para 0026). The binder holds the conductive agent close to the active material (para 0038).

As to claim 18, Kurihara et al. teach of having a coating liquid (with the composite particle), wherein the coating liquid is placed on the collector and is solidified afterwards (para 100). (Note: The collector and active material are in electric contact with one another (para 0267).)

As to claim 19, Kurihara et al. teach of having a conductive polymer (made from the monomer) in the liquid coating (para 0185-0186). This is done during drying and curing (solidifying) (para 0239).

As to claim 20, Kurihara et al. teach of using a conductive polymer that is UV-curable, wherein the polymerization happens during drying and currying (solidifying) (para 0239).

As to claim 21, as seen in fig. 22 of Kurihara et al., the final product (wherein the method of making an electrode is used) is a battery with anode [10] and cathode [20] sandwiching electrolyte [40].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 12, 13, 18, and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-35317 (Imamura) in view of US 2002/0009646 (Matsubara et al.).

As to claim 12, Imamura teaches of making an electrode material, wherein the final product are pellets (para 0014, lines 1-4). Specifically, making the positive active material is set forth, wherein active material is mixed with conductive material and a binder via solvent (for example, water), wherein

afterwards, the material is dried and granulated to make pellets (granulated particle) (para 0015-0016).

Imamura does not teach that the granulated particle is added to a liquid adapted to disperse or dissolve the granulated particle.

However Matsubara et al. teach of a similar process, wherein particles are bound to active material via a polymer, and wherein the composite material is dried into pellet like shapes (fig. 2; para 0077-0080). However, it is taught that to fabricate the desired electrode, the composite material was re-deposited in a solvent with a binder and mixed (para 0082). The motivation for re-depositing pellets of a composite active material in a solvent with a binder is to create a slurry that is able to have uniform distribution of such active material, wherein the material itself is cohesive (as to minimize resistance due to gaps or cracks, as a plurality of pellets would form). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to re-deposit pellets of a composite active material in a solve with a binder in order to create a slurry that is able to have uniform distribution of such active material, wherein the material itself is cohesive. Furthermore, at the very least, Matsubara et al. provides the general teaching that a composite active material (an active material with other particles adhered to it), can be re-mixed in a solution to provide a slurry to form an electrode. Accordingly, one of ordinary skill in the art would have combined the composite active material (pellets) of Imamura with the method of mixing and depositing as taught by Matsubara et al. with the predictable result of forming a coating material that is able to be made into an

electrode, as Matsubara is drawn to the general teaching of making composite active material pellets into a form that is able to be made into an electrode. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to redeposit the composite active material of Imamura into a solvent with a binder, as taught by Matsubara et al., as such dispersion and manner of creating an electrode from a composite active material (no matter what kind of composite active material) would have yielded the predictable result of creating a slurry that could be able to be cast as an electrode.

As to claim 13, the combination of Imamura and Matsubara et al. render such a limitation obvious. As stated before, Imamura, making the positive active material is set forth, wherein active material is mixed with conductive material and a binder via solvent (for example, water), wherein afterwards, the material is dried and granulated to make pellets (granulated particle) (para 0015-0016). Accordingly, there is a material liquid (as a binder, conductive agent, and solvent are present), wherein mixing with the positive material serves to attach such a material liquid to the particles of active material, wherein as the composition is the same, and thus it can be interpreted that the binder brings the conductive material close to the active material (barring specification as to what constitutes "close" contact). Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the specification but not recited in the claim are not read into the

claim. See *In re Zletz*, 893F.2d 319, 321-22,13 USPQ2d, 1320, 1322 (Fed. Cir. 1989). Finally, it is noted that drying constitutes removing the solvent.

As to claim 18, the combination of Imamura and Matsubara et al. render such a limitation obvious. The final product of Matsubara et al. is an electrode, wherein the slurry (of composite active material, solvent, and binder) is applied to a copper foil (current collector), wherein the solvent (N-methylpyrrolidone) is evaporated from the final product (para 0082-0083). (It is noted that the negative active material, as placed next to the copper plate would inherently constitute having an electrical contact.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is as copper is conductive material, and such contact is necessary for the operation of a battery.

The Examiner invites applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

As to claim 21, the combination of Imamura and Matsubara et al. render such a limitation obvious. It is noted that although Matsubara et al. specifically teaches the process of making pellets of composite active material for the positive electrode, pellets are embodied in both anode and cathode (para 0014, lines 1-4). In a similar manner Matsubara et al.'s process is drawn towards the anode, however, the general teaching is electrode making, and thus one of ordinary skill in the art would have found it obvious to apply such a method (of mixing composite active material with a binder and solvent to make an electrode) to both the anode and cathode side, as such an application would have yielded the predictable result of forming an electrode. It is further noted that Imamura shows a positive electrode [1] and negative electrode [2] sandwiching an

electrolyte impregnated separator [4] (fig. 1; para 0014). (It is noted that the electrolytic solution is inherently ion conductive, as is embodied in the definition of being "electrolytic," wherein ion conduction of the electrolyte is necessary for the function of the battery. See the rejection of claim 13 for the Office's policy on inherent characteristics.)

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imamura in view of Matsubara et al., as applied to claims 12, 13, and 18, in further view of US 2002/0182506 (Cagle) and WO99/28986 (Nakagawa et al.) (Note: US 6673496 is being relied upon as the English translation for the WO document that corresponds to it).

As to claim 19, the combination of Imamura and Matsubara et al. do not teach (a) that the binder used is a conductive polymer, wherein the conductive polymer is fabricated within the liquid slurry by use of the monomer, wherein the polymerization occurs during the solidifying of the liquid film.

With respect to (a), Cagle teaches of the use of many polymers as binders including polyvinylidene fluoride (as used in Matsubara et al.) and polyethylene oxide (a conductive polymer) (para 0014-0015). (Note: Although not specifically stated that polyethylene oxide is conductive, such a characteristic is inherent. The basis of inherency is that it is the same material as Applicant embodies to be inherent (see para 0067 of the Specification). Accordingly, the material itself inherently has the property of conductivity. See the rejection of claim 13 for the Office's policy on inherent characteristics.) Accordingly, Cagle teaches that polyvinylidene fluoride and polyethylene oxide are art recognized equivalents for

binders in batteries. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a polyethylene oxide (conductive polymer) instead of a polyvinylidene fluoride binder, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

As to (b), Nakagawa et al. teach of using a polymeric monomer of ethylene oxide (monomer) (binder material) along with electrolyte within one of the electrodes, wherein such monomers are irradiated after the slurry is placed on the current collector to form the polymer (i.e. during a drying/solidifying time) (claim 3; col. 12, lines 22-31). (Accordingly, polymerization is seen to be advanced during such a time to create the polymer, as such polymerization occurs via irradiation during such a time.) The motivation for using such a method is to avoid the problems of using a polymeric binder, or polymerizing a monomer alone (i.e. making it difficult to get rid of solvent and having an electrode that has bad ion conductivity), and thus to improve ion conductivity of a lithium ion, to improve initial capacity, to provide good charge/discharge characteristics and cycle life (col. 2, lines 23-67; col. 3, lines 1-19). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to use Nakagawa et al.'s binder inclusion method (specifically including an electrolyte in the electrode, wherein the binder monomer is polymerized after being put on the current collector) to make a

lithium battery electrode in order to improve ion conductivity and initial capacity, as well as to provide good charge/discharge characteristics and cycle life.

12. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imamura in view of Matsubara et al., as applied to claims 12, 13, and 18, in view of Calge and Nakagawa et al., as applied to claim 19, as evidenced by US 2001/0027299 (Yang et al.).

As to claim 20, it is noted that the combination of Imamura, Matsubara et al., Cagle, and Nakagawa et al. render obvious the limitation as to when the polymerization occurs/is advanced. As previously stated, Nakagawa et al. teach of using a polymeric monomer of ethylene oxide (monomer) (binder material) along with electrolyte within one of the electrodes, wherein such monomers are irradiated after the slurry is placed on the current collector to form the polymer (i.e. during a drying/solidifying time) (claim 3; col. 12, lines 22-31). (Accordingly, polymerization is seen to be advanced during such a time to create the polymer, as such polymerization occurs via irradiation during such a time.) It is noted that it is not specifically taught that polymer (polyethylene oxide) is UV-curable. However, it is submitted that such a characteristic is inherent. Yang et al. is relied upon to show this fact. (See para 0062, wherein it is stated polyethylene oxide can be cured under UV radiation. Please refer to the rejection of claim 13 as to the Office's policy on inherent characteristics.)

Double Patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude"

granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 12, 13, 18, and 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 62, 70, and 72 of copending Application No. 10/556567.

The pertinent claims of the copending application are listed below:

62. (Withdrawn) A producing method of an electrode comprising at least a conductive active material-containing layer which comprises an electrode active material, and a current collector disposed in a state being in electrically contact with the active material-containing layer, the method comprising:

a granulating step of forming a composite particle comprising an electrode active material, a conductive additive and a binder by bringing the conductive additive and the binder capable of binding the electrode active material and the conductive additive into a close contact with the particle consisting of the electrode active material to integrate with each other; and

a forming step of an active material-containing layer for forming the active material-containing layer in a portion of the collector to be formed with the active material-containing layer using the composite particle, and

the granulating step comprising:

a stock solution preparing step for preparing a stock solution comprising the binder, the conductive additive and a solvent;

a fluidized bed forming step for forming the particle consisting of the electrode active material into a fluidized bed by throwing the particle consisting of the electrode active material into a fluidizing bathe; and

a spray-drying step, in which the stock solution is sprayed into the fluidized bed comprising the particle consisting of the electrode active material, thereby the stock solution is allowed adhering to the particle consisting of the electrode active material

and dried to remove the solvent from the stock solution adhered to the surface of the particle consisting of the electrode active material to bring the particle consisting of the electrode active material and the particle of the conductive additive into a close contact with each other by means of the binder.

70. (Withdrawn) The producing method of an electrode according to claim 62, wherein the forming step of the active material-containing layer comprises:

a coating liquid-preparing step for preparing a coating liquid for forming an electrode by adding the composite particle to a liquid capable of dispersing or kneading the composite particle;

a step for applying the coating liquid for forming an electrode to a portion of the collector to be formed with the active material-containing layer; and

a step for solidifying the liquid film of the coating liquid for forming an electrode applied to a portion of the collector to be formed with the active material-containing layer.

72. (Withdrawn) A producing method of an electrochemical element provided with at least an anode, a cathode and an electrolyte layer having the ion conductivity, and having a structure such that the anode and the cathode are disposed opposite to each other being interposed by the electrolyte layer,

an electrode produced in accordance with the producing method of the electrode according to claim 62 being used as the electrode for one or both of the anode and the cathode.

Copending claims 62 and 70 read on currently pending claims 12, 13, and 18, as they teach of the same granulating steps (including all of the same materials – active material, conductive material, and binder), the fact that the granulated particles are dispersed in a solvent (as applied to currently pending claims 12 and 13), wherein such a product is placed on a collector and solidified (as applied to currently pending claim 18).

Copending claim 72 reads on currently pending claim 21, with respect to the electrochemical cell formed (when combined with the preceding noted copending claims).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

15. Claims 12, 13, 18, and 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims15-17, 35, and 36 of copending Application No. 10/901348.

The pertinent claims of the copending application are listed below:

15. (Withdrawn-Currently Amended) A method of making a composite particle for an electrode, the method comprising a granulating step of bringing a conductive auxiliary agent and an oxidizing/reducing agent including α-Fe_2O_3 into close contact with a particle made of an electrode active material and integrating them together, so as to form a composite particle containing the electrode active material, conductive auxiliary agent, and oxidizing/reducing agent.

16. (Withdrawn) A method of making a composite particle for an electrode according to claim 15, wherein the granulating step includes:

a material solution preparing step of preparing a material solution containing the conductive auxiliary agent, the oxidizing/reducing agent, and a solvent;

a fluidizing step of introducing a particle made of the electrode active material into a fluidized bed so that the particle made of the electrode active material forms a fluidized layer; and

a spray-drying step of spraying the material solution into the fluidized layer containing the particle made of the electrode active material, so that the material solution is attached to the particle made of the electrode active material and dried, removing the solvent from the material solution attached to a surface of the particle made of the electrode active material, and bringing the particle made of the electrode active material, a particle made of the conductive auxiliary agent, and the oxidizing/reducing agent into close contact with each other.

17. (Withdrawn) A method of making a composite particle for an electrode according to claim 16, wherein the fluidized bed is adjusted to a temperature of at least 50°C but not higher than a melting point of the binder in the granulating step.

35. (Original) A method of making an electrode according to claim 33, wherein the active material containing layer forming step comprises:

a coating liquid preparing step of adding the composite particle to a liquid adapted to disperse or knead the composite particle so as to prepare an electrode forming coating liquid;

a step of applying the electrode forming coating liquid to a part to be formed with the active material containing layer in the collector; and

a step of solidifying a liquid film constituted by the electrode forming coating liquid applied to the part to be formed with the active material containing layer in the collector.

36. (Currently Amended) A method of making an electrochemical device comprising, at least, a first electrode, a second electrode, and an electrolyte layer having an ionic conductivity, the first and second electrodes opposing each other by way of the electrolyte layer,

the method comprising:

a composite particle forming step of forming a composite particle by way of a granulating step of bringing a conductive auxiliary agent and an oxidizing/reducing agent including α-Fe_2O_3 into close contact with a particle made of an electrode active material and integrating them together so as to form a composite particle containing the electrode active material, conductive auxiliary agent, and oxidizing/reducing agent; and

an electrode forming step of forming at least one of the first and second electrodes by way of an active material containing layer forming step of forming an active material containing layer by using the composite particle at a part to be formed with the active material containing layer in the collector.

Copending claims 15-17 and 35 read on currently pending claims 12, 13, and 18, as they teach of the same granulating steps (including all of the same materials – active material, conductive material, and binder), the fact that the granulated particles are dispersed in a solvent (as applied to currently pending claims 12 and 13), wherein such a product is placed on a collector and solidified (as applied to currently pending claim 18).

Copending claim 36 reads on currently pending claim 21, with respect to the electrochemical cell formed (when combined with the preceding noted copending claims).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

16. Claims 12, 13, 18, and 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13, 15-17, and 19 of copending Application No. 10/924858.

The pertinent claims of the copending application are listed below:

13. A method of making an electrode comprising, at least, a conductive active material containing layer containing an electrode active material and a conductive collector disposed in a state electrically in contact with the active material containing layer, the method comprising:

a composite particle forming step including a granulating step of integrating a conductive auxiliary agent and a binder adapted to bind the conductive auxiliary agent and the electrode active material together with a particle made of the electrode active material while in close contact with each other in an inert gas atmosphere so as to form a composite particle for an electrode containing the electrode active material, conductive auxiliary agent, and binder; and

an active material containing layer forming step of forming an active material containing layer at a part to be formed with the active material containing layer in the collector in the inert gas atmosphere by using the composite particle.

15. A method of making an electrode according to claim 13, wherein the granulating step comprises:

a material liquid preparing step of preparing a material liquid containing the binder, the conductive auxiliary agent, and a solvent;

a fluidizing step of putting a particle made of the electrode active material into a fluidizing tank and causing the particle made of the electrode active material to form a fluidized layer; and

a spraying/drying step of spraying the material liquid into the fluidized layer containing the particle made of the electrode active material so that the material liquid is attached to the particle made of the electrode active material and is dried, so as to remove the solvent from the material liquid attached to a surface of the particle made of the electrode active material, and cause the binder to bring the particle made of the electrode active material and a particle made of the conductive auxiliary agent into close contact with each other.

16. A method of making an electrode according to claim 13, wherein the active material containing layer forming step comprises:

a sheet forming step of subjecting a powder containing at least the composite particle to heating and pressing so as to yield a sheet containing at least the composite particle; and

an active material containing layer arranging

step of arranging the sheet as the active material containing layer on the collector.

17. A method of making an electrode according to claim 13, wherein the active material containing layer forming step comprises:

a coating liquid preparing step of preparing an electrode forming coating liquid by adding the composite particle to a liquid adapted to disperse or knead the composite particle;

a step of applying the electrode forming coating liquid to the part to be formed with the active material containing layer in the collector; and

a step of solidifying a liquid film constituted by the electrode forming coating liquid applied to the part to be formed with the active material containing layer in the collector.

19. A method of making an electrochemical device comprising, at least, an anode, a cathode, and an electrolyte layer having an ionic conductivity, the anode and cathode opposing each other by way of the

electrolyte layer, the method comprising:

an electrode forming step of forming an electrode by way of:

a composite particle forming step including a granulating step of integrating a conductive auxiliary agent and a binder adapted to bind the conductive auxiliary agent and an electrode active material together with a particle made of the electrode active material while in close contact with each other in an inert gas atmosphere so as to form a composite particle for an electrode containing the electrode active material, conductive auxiliary agent, and binder; and

an active material containing layer forming step of forming an active material containing layer at a part to be formed with the active material containing layer in the collector in the inert gas atmosphere by using the composite particle;

wherein the electrode obtained by the electrode forming step is used as at least one of the anode and cathode.

Copending claims 13 and 15-17 read on currently pending claims 12, 13, and 18, as they teach of the same granulating steps (including all of the same materials – active material, conductive material, and binder), the fact that the granulated particles are dispersed in a solvent (as applied to currently pending claims 12 and 13), wherein such a product is placed on a collector and solidified (as applied to currently pending claim 18).

Copending claim 19 reads on currently pending claim 21, with respect to the electrochemical cell formed (when combined with the preceding noted copending claims).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

17. Claims 12, 13, 18, and 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 8-11, 14, 16, and 17 of copending Application No. 11/087999.

The pertinent claims of the copending application are listed below:

8. A method of manufacturing electrode composite particles, involving a granulation step which firmly sticks said conductive auxiliary agent and said binder to particles of said electrode active substance so as to form a one-piece construction, and the particles of said electrode

active substance comprise at least large diameter particles and small diameter particles which simultaneously satisfy conditions expressed by the following relations (1)-(3):

$1\ \mu m \leqq R \leqq 100\mu m$ ... (1)

$0.01\mu m \leqq r \leqq 5\mu m$ ... (2)

$(1/10000) \leqq (r/R) \leqq (1/5)$ ... (3)

[in the relations (1)-(3), R is the average particle diameter of said large particles, and r is the average particle diameter of said small particles.]

9. The method of manufacturing electrode composite particles according to Claim 8, wherein said granulation step comprises:

a starting material solution-preparing step of preparing a starting material solution comprising said binder, said conductive auxiliary agent and a solvent;

a fluidized bed forming step wherein particles of said electrode active substance are introduced into a flow bath, so that the particles of said electrode active substance are formed into fluidized bed; and

a spray drying step wherein said starting material solution is made to adhere to particles of said electrode active substance by spraying said starting material solution into said fluidized bed containing particles of said electrode active substance, drying is performed, said solvent is removed from the starting material solution adhering to the surface of the particles of electrode active

substance, and the particles of said electrode active substance are firmly stuck to the particles of said conductive auxiliary agent by said binder.

10. The method of manufacturing electrode composite particles according to Claim 9, wherein, in said fluidized bed forming step, a gas flow is generated in said flow bath, particles of said electrode active substance are introduced into the gas flow, and the particles of said electrode active substance are formed into fluidized bed.

11. The method of manufacturing electrode composite particles according to Claim 9, wherein:

in said starting material solution-preparing step, said starting material solution further comprises the small particles among the particles of electrode active substance, and

in said fluidized bed forming step, the large particles among the particles of electrode active substance are introduced into the flow bath.

14. A method of manufacturing an electrode, said electrode comprising at least an electrically conducting active substance-containing layer containing an electrode active substance, and a collector disposed in electrical contact with said active substance-containing layer, said method comprising:

an active substance-containing layer forming step wherein said active substance-containing layer is formed by using electrode composite particles manufactured by the electrode composite particle manufacturing method according to Claim 8 at a site where the active substance-containing layer of said collector is to be formed.

16. The electrode manufacturing method according to Claim 14, wherein said active substance-containing layer

forming step comprises:

a coating solution-preparing step of preparing an electrode- forming coating solution by adding said composite particles to a liquid in which said composite particles can be dispersed or kneaded,

a step of coating said electrode-forming coating solution at a site where the active substance-containing layer of the collector is to be formed, and

a step of solidifying the film of electrode-forming coating solution coated at the site where the active substance-containing layer of the collector is to be formed.

17. A method for forming an electrochemical element comprising at least an anode, cathode and electrolyte layer having ion conductivity, said anode and said cathode being disposed in opposite positions on either side of said electrolyte layer, wherein:

the electrode manufactured by the electrode manufacturing method according to Claim 14 is used as at least one of said anode and said cathode.

Copending claims 8-11, 14, and 16 read on currently pending claims 12, 13, and 18, as they teach of the same granulating steps (including all of the same materials – active material, conductive material, and binder), the fact that the granulated particles are dispersed in a solvent (as applied to currently pending claims 12 and 13), wherein such a product is placed on a collector and solidified (as applied to currently pending claim 18).

Copending claim 17 reads on currently pending claim 21, with respect to the electrochemical cell formed (when combined with the preceding noted copending claims).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUGENIA WANG whose telephone number is (571)272-4942. The examiner can normally be reached on 7 - 4:30 Mon. - Thurs., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. W./
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795